

WHAT IS CLAIMED IS :

1. A method for the synthesis of an image for aeronautical applications, said image including 3D mapping representation of a terrain overflown by an aircraft, the terrain comprising at least one potential threat and 3D representation of an area of intervisibility defined as a portion of the sphere representing the range of said threat, the method comprising the steps of:

forming a 3D representation of said area of intervisibility by a surface layer corresponding to the lower surface of the area of intervisibility, said lower surface being constituted by points belonging to the area of intervisibility, such that the distance from each point of said lower surface to the point of the terrain having the same geographical coordinates is as small as possible.

2. The method for the synthesis of an image according to claim 1, further comprising revealing the surface layer in semi-transparency in such a way that the areas of the terrain located beneath the surface layer remain partly visible.

3. The method for the synthesis of an image according to claim 1, wherein the surface layer has a first face (ED) and a reverse face (EV), and further comprising making the first face appear in a first color and the reverse face appear in a second color, the second color being different from the first color.

4. The method for the synthesis of an image according to claim 1, further comprising making a texture appear on the first face or reverse face of the surface layer.

5. The method for the synthesis of an image according to claim 4, wherein the texture is a regular grid.

6. The method for the synthesis of an image according to claim 4, wherein the lines of the grid are transparent.

7. The method for the synthesis of an image according to claim 1, further comprising revealing the perimeter of the maximum range of the threat in the form of the convex surface of a vertical texture with constant pitch positioned on the terrain.

8. The method for the synthesis of an image according to claim 7, wherein said texture is a closed vertical grid positioned on the terrain.

9. A unit for the generation of a mapping synthesis image comprising a representation of the 3D image of a terrain overflown by an aircraft, said terrain comprising at least one threat, said mapping image also comprising a representation of the image of the area of intervisibility of said threat, wherein the method of synthesis of the mapping image is made according to claim 1.

10. An avionics system mounted on an aircraft comprising one or more interfaces of the control station type:

- means for the geographical localization of the aircraft in space comprising sensors;

- a navigation unit providing for the processing of data coming from chains of sensors;

- a mapping data base comprising at least the information on relief of the terrain as well as the nature and the positioning of the different potential threats;

- a unit for the generation of mapping images making it possible, as a function of the data coming from the navigation unit as well as information given by the pilot, to generate the 3D image of the terrain and of the area of intervisibility; and

- an MFD (multifunction display) type display device positioned on the instruments panel enabling the real-time representation of the 3D image of the ground and of the area of intervisibility and of the electronic links

connecting the different units of the system, wherein the mapping image generation unit is according to claim 9.

11. The method for the synthesis of an image, according to claim 2, wherein the surface layer has a first face (ED) and a reverse face (EV), and further comprising making the first face appear in a first color and the reverse face appear in a second color, the second color being different from the first color.

12. The method for the synthesis of an image, according to claim 2, further comprising making a texture appear on the first face or reverse face of the surface layer.

13. The method for the synthesis of an image, according to claim 3, further comprising making a texture appear on the first face or reverse face of the surface layer.

14. The method for the synthesis of an image, according to claim 5, wherein the lines of the grid are transparent.

15. The method for the synthesis of an image, according to claim 6, further comprising revealing the perimeter of the maximum range of the threat in the form of the convex surface of a vertical texture with constant pitch positioned on the terrain.

16. The unit for the generation of a mapping synthesis image, according to claim 9, wherein said method comprises means to reveal the surface layer in semi-transparency in such a way that the areas of the terrain located beneath the surface layer remain partly visible.

17. The unit for the generation of a mapping synthesis image, according to claim 9, wherein the surface layer having a first face (ED) and a reverse face (EV), said method comprises means to make the first face appear in a first color and the reverse face appear in a second color, the second color being different from the first color.

18. The unit for the generation of a mapping synthesis image, according to claim 9, wherein said method comprises means to reveal the perimeter of the maximum range of the threat in the form of the convex surface of a vertical texture with constant pitch positioned on the terrain.

19. The avionics system mounted on an aircraft according to claim 10, wherein said method comprises means to reveal the surface layer in semi-transparency in such a way that the areas of the terrain located beneath the surface layer remain partly visible.

20. The avionics system mounted on an aircraft according to claim 10, wherein the surface layer having a first face (ED) and a reverse face (EV), said method comprises means to make the first face appear in a first color and the reverse face appear in a second color, the second color being different from the first color.

21. The avionics system mounted on an aircraft according to claim 10, wherein said method comprises means to reveal the perimeter of the maximum range of the threat in the form of the convex surface of a vertical texture with constant pitch positioned on the terrain.